



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



STEVEN E. CHESTER
DIRECTOR

December 21, 2006

Mr. Greg Cochran, Director
Michigan Dioxin Initiative
The Dow Chemical Company
1790 Building
Midland, Michigan 48674

Dear Mr. Cochran:

SUBJECT: The Dow Chemical Company (Dow), Tittabawassee River Interim Response Activities (IRAs)/Reach O Plan and Pilot Corrective Action Plan (PCAPs)

This letter documents recent discussions between the Michigan Department of Environmental Quality (MDEQ), Dow, and its contractor, Ann Arbor Technical Services (ATS), related to the proposal and implementation of pilot corrective actions or interim response activities for areas of contamination that have been recently identified in the upper 6.5 miles of the Tittabawassee River Area of Concern. This letter also acknowledges the MDEQ's receipt of Dow's December 20, 2006, PCAPs. The MDEQ is in conceptual agreement with these PCAPs and is in the process of reviewing these plans as IRAs. The MDEQ is committed to working with Dow in a collaborative manner to develop specific and detailed IRA plans for implementation as quickly as feasible.

Background

On November 21, 2006, Dow and ATS notified the MDEQ of the identification of a sediment deposit in the Tittabawassee River that exhibited a concentration of 87,000 parts per trillion (ppt) toxic equivalence (TEQ) of furans and dioxins. The 87,000 ppt TEQ sample was collected from a layer 8 inches thick that is overlain by approximately 6 inches of sand with a concentration of 230 ppt TEQ. This deposit is located in the vicinity of river station 322 + 50, near the center of the river. During the November 21, 2006, GeoMorphTM working meeting, agreement was reached on additional sampling that Dow would conduct to further delineate an in-channel deposit located in the vicinity of river station 322 + 50. The MDEQ considers the November 21, 2006, date to be the initiation point of the IRA process.

Several other sediment deposits and eroding bank deposits that contain high TEQ concentrations were also identified in this upper 6.5 miles of the Tittabawassee River as part of the GeoMorphTM investigation. Samples of eroding bank deposits were collected by Dow and the MDEQ on November 29, 2006. The results from this sampling event were reported to the MDEQ on December 15, 2006.

Additional investigation of these areas of the river and related corrective action work was discussed by Dow, ATS, and the MDEQ during a series of working meetings held during late November and December. On December 20, 2006, Dow proposed the PCAPs for conducting this work. It is the MDEQ's understanding that Dow's December 20, 2006, proposal will be followed by detailed work plans that specifically address each of the individual areas identified for pilot corrective action/interim response.

Regulatory Authority

As noted above, the MDEQ concurs that interim response activities (IRAs) for portions of the upper 6.5 miles of the Tittabawassee River are necessary in accordance with Conditions XI.B.9. and XI.G. of the hazardous waste management facility operating license (License) issued to Dow on June 12, 2003, pursuant to Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Dow's submittal of the PCAPs meets the requirement of Condition XI.G.1. of the License to submit a written IRA Work Plan to the Chief of the Waste and Hazardous Materials Division (WHMD) for review and approval within 60 days after the licensee receives written notification by the WHMD Chief that IRAs are necessary.

Condition XI.B.9. of the License provides that the WHMD Chief may require Dow to implement IRAs to prevent, minimize, or mitigate injury to public health, safety, welfare, or the environment in accordance with Condition XI.G. of the License at any of the specific off-site area(s) identified in Condition XI.B.2. of the License (which include the Tittabawassee sediments and/or floodplain) at any time during the corrective action process where information indicates that the injury has or may have resulted directly or indirectly from the facility. Condition XI.G. of the License requires such activities to conform with or be substantively equivalent to the IRA provisions of Part 201, Environmental Remediation, of Act 451, and Conditions XI.G.1. - XI.G.7. of the License.

It is the MDEQ's understanding that Dow intends to implement these IRAs, once approved, as PCAPs for the upper Tittabawassee River and that they will serve as a pilot for similar IRAs and possibly final corrective actions that may be necessary for other portions of the Tittabawassee and Saginaw Rivers.

Path Forward

The MDEQ will continue to work with Dow and ATS to develop and finalize specific and detailed IRAs work plans that will be implemented immediately as weather allows. It is anticipated that the more detailed PCAP/IRA work plans to be submitted by Dow for review and approval by the MDEQ will accomplish the following:

1. Sequentially describe a process and time line to remove the deposit at 322 + 50. The MDEQ has directed, and is working with, Dow to develop a plan for the safe removal of the deposit that can be implemented as quickly as possible. In our discussions with Dow, the MDEQ has emphasized that this work must be completed safely and without destabilizing and possibly losing the contaminated deposit during remediation efforts. This process, which will be scheduled for immediate implementation, will include but not be limited to:

- (a) Precision mapping of the deposit with geophysics and near real-time sediment sampling and analysis.
 - (b) Contaminated bank removal and channel widening adjacent to the deposit. This will provide for additional stabilization of the deposit by increasing the cross sectional area of the river near the deposit (potentially drawing the Thalweg away from the deposit area) and preparing the deposit for removal as soon as weather, state and federal permitting, and river conditions allow.
 - (c) Cofferdam installation to isolate the deposit from the river and allow for "semi dry" removal. This methodology is preferred in order to eliminate potential loss of the deposit during removal activities.
 - (d) Removal and appropriate disposal of the deposit.
2. Describe a process and time line for the removal of a deposit of highly contaminated sediments and waste materials that have been identified in Reach D, adjacent to the northeast shoreline at river station 55 + 00, in between two rows of sheet piling. This deposit will be prioritized for immediate removal and disposal as a hazardous waste.
3. Address other IRAs, which Dow is proposing to be conducted concurrently. These additional actions are extensive in scope (approximately 14,000 feet of Tittabawassee River) and will address other in-channel deposits and eroding banks areas that contain high TEQ concentrations. These concentrations have been measured up to 84,000 ppt TEQ in riverbank deposits and potentially represent a greater risk of additional river contamination than the in-channel deposit identified at 322 + 50.

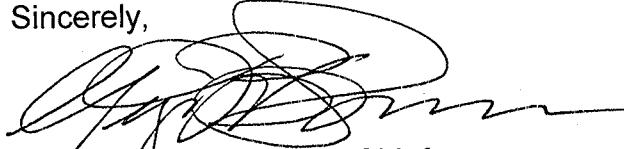
Our understanding is that preparation for these activities is underway with Dow beginning to stage equipment and beginning the permit application processes with the MDEQ and the United States Army Corps of Engineers. Conceptually, the MDEQ agrees that the December 20, 2006, proposal (1) includes an aggressive schedule, considering weather and river flow conditions, and (2) proposes to accomplish this work with minimal ecological harm.

Schedule

The MDEQ commits to working with Dow to continue the series of working meetings to expedite the development of detailed work plans for the areas requiring IRAs. These meetings will be used as a means to clarify issues and efficiently revise the documents if more detailed information is required for approval. Based on the discussion with ATS on December 21, 2006, ATS will begin the development of detailed work plans immediately and will be prepared to present them to the MDEQ at a meeting that will be scheduled for the week of January 15, 2007. During that meeting, the MDEQ and Dow will also agree on a schedule for the formal submission of the detailed work plans. As part of the initial working meeting, the MDEQ would like to discuss how progress reporting for this work will be accomplished. Ms. Cheryl Howe, Hazardous Waste Section (HWS), WHMD, will continue to be the primary point of contact for arranging these meetings. She may be reached at 517-373-9881 or howec@michigan.gov.

Should you or your staff have any questions concerning this process, please contact Mr. Al Taylor, HWS, WHMD, at 517-335-4799 or taylorab@michigan.gov, or you may contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'George W. Bruchmann', with a long horizontal flourish extending to the right.

George W. Bruchmann, Chief
Waste and Hazardous Materials Division
517-373-9523

cc: Mr. Ben Baker, Dow
Mr. David Gustafson, Dow
Mr. Philip Simon, ATS
Mr. Peter Simon, ATS
Ms. Lauri Gorton, CH2M Hill
Ms. Mary A. Gade, U.S. Environmental Protection Agency, Region 5
Mr. Gerald Phillips, U.S. Environmental Protection Agency, Region 5
Mr. Greg Rudloff, U.S. Environmental Protection Agency, Region 5
Mr. Jim Sygo, Deputy Director, MDEQ
Ms. Liane Shekter Smith, MDEQ
Mr. Steve Buda, MDEQ
Ms. De Montgomery, MDEQ
Mr. Terry Walkington/Ms. Trisha Peters, MDEQ
~~Ms. Cheryl~~ Howe, MDEQ
Mr. Al Taylor, MDEQ
Dr. Deb MacKenzie-Taylor, MDEQ